



LOS ALAMOS has its Ashley Pond. Here's our SNLAKE, a popular recreation spot for picnickers, sailboaters, and fisherpersons from Bldgs. 821

and 823, background. (Plans call for the area to be filled in and converted to a parking lot.)

Space-Age Gremlin Attacks ICs

New Lab Explores Electromigration

Back in 1982, the space shuttle flight program was threatened by a peculiar problem with computer circuitry. After repeated failures of a trainer computer — a system very similar to those used in the shuttle itself — engineers found that a mysterious whisker of aluminum had short-circuited one of the computer chips.

When the trainer computer post-mortem was complete, IBM experts placed the blame firmly on a space age gremlin called electromigration. The aluminum, which had started out as a conductor between components, ended up as a troublesome filament extruded through the chip's passivation layer.

Electromigration attacks the very fine metallic conductor paths that link different components on integrated circuits (ICs) on silicon chips. These interconnections are so fine, and the power flowing through them so relatively high, that electrons can literally knock the atoms within the conductors out of place. A short circuit or open circuit occurs on a microscopic scale, and the component fails.

While it's a new word to most people, electromigration is becoming common in the vocabulary of high-tech electronics troubleshooters. Already IBM sponsors an annual symposium on the subject; Albuquerque was the host city for a related meeting on March 5-7 this year.

Sandia, which began exploring the electromigration phenomenon in 1980, has increased its capability with a special laboratory that came on stream earlier this year in Bldg. 805. The lab, run by Jim Arzigian and Kent Schubert of Electronic Property Materials Division 1815, is looking

into current and some likely future problems of this and other IC failure mechanisms.

There are three distinct aspects to the Sandia program, according to Jim. One is to examine different alloys that are (or could be) used in metallization; another is to look at the problems of the very fine-lined circuits that might be typical of the ICs of the 1990s; another is to support Sandia's IC process development effort.

The electromigration failure mechanism is peculiar to integrated circuits. "Typically in an ordinary circuit you can pass about 1000 amperes per square centimeter of conductor cross-section," says Jim. "In ICs you can pass about a million amperes per square centimeter through the conductor — that's more current than conventional wire; far more electrons are flowing down the metal line per cross sectional area.

"It's as though you could take all the power from a nuclear power plant and pass it through a wire the size of your thumb."

In addition to several other devices, the new lab has ordered a scanning electron microscope (SEM), built to Sandia specifications. This instrument will operate at higher vacuum than conventional SEMs; this feature — and the fact that the vacuum is oil free — will allow cleaner operation and thus reduce the risk of contamination.

In-depth study of metallization has required the development of a special vacuum chamber where physical and chemical processes can be recorded and measured. "The one we have is about at the state of the art," says Jim. "Kent Schubert of our

(Continued on Page Four)

Best in U.S.

93% of Sandians Now Buy Bonds

With results essentially complete, 93 percent of Sandians are now buying U.S. Savings Bonds through the payroll deduction plan, according to Art Clark (7210), chairman of Sandia's Savings Bond committee that conducted the recent Bond Drive. This is a three percent increase over the 90 percent of employees who were participating at the beginning of the campaign.

The latest data from the drive show that one vice presidency — Organization 4000 — had 100 percent participation along with three directorates — 400, 1800, and 3300. There were 56 departments that achieved 100 percent participation.

Organizations 1000 had 98 percent; 2000, 93 percent; 3000, 91 percent; 5000, 97 percent; 6000, 92 percent; 7000, 94 percent; and 8000, 88 percent.

"This is more than an outstanding record," Art says, "it's the best — for a company its size, Sandia is tops in the country in buying bonds.

"Here's more good news," Art continues. "The Treasury Department announced on May 1 that the current interest rate for Savings Bonds is 9.95 percent, up from the previous six-month rate of 9.38 percent. This was a factor in the success of our campaign."

Art praised the work of the Bond committee, the various organization coordinators, and individual canvassers. "They worked hard," Art says. "The campaign was complicated by new hires entering the divisions and by temporary employees here for the summer, but their participation, too, was rewarding. My thanks to all who helped in the drive, and to all employees who participated."

Antojitos

It's Open Season in California Retiree Bill Jamieson, longtime PR practitioner at our Livermore labs, sent me a letter recently in which he asked whether I'd ever met Bob Tate. He went on to point out that Bob had invented a compass without a needle. The company's motto is, of course, widely known: He who has a Tate's is lost.

Bill also mentioned that he had certainly enjoyed LAB NEWS coverage of the State of the Labs interview with President Dacey last March. But he pointed out that the article suffered from a dearth of photos to accompany the text. Bill, always willing to assist us apprentice editors, suggested that next year we use a novel journalistic technique in which small photos of our subject are linked corner to corner and extend completely around the borders of each page. Like so:



The technique, Bill hastens to point out, is known as a Dacey chain. Thanks, Bill. You'll be pleased to hear that around the LAB NEWS office, you're known, at least initially, as Sweet Old Bill.

* * *

Going on Vacation? Then please arrange for someone in your office to open your non-private mail. Twice recently I've sent a memo that needed a quick response only to find later that the recipient was out of town for a couple of weeks. And no, I don't think I should have to call all the people I send mail to in order to learn whether or not they're going to be here to respond. End of diatribe. ●BH

* * *

Never do card tricks for the group you play poker with.

John Andersen Named Fellow By ASME



John Andersen (5161) recently was named a Fellow by the American Society of Mechanical Engineers "for exhibiting superior performance both in his technical ability and accomplishments and for his dedication to the society in section, regional, and national activities."

A Distinguished Member of Technical Staff, John has been at Sandia 26 years. His current assignment is in the Advanced Weapons Systems Department 5160, project manager for Division 5161 Phase I and Phase II studies.

John's previous work includes leading the development of a lightweight container for the air transport of small quantities of plutonium. John's design met all the requirements for surviving aircraft accidents and was certified for use in international shipments. He is still an international consultant for crashworthy and leak-tight nuclear materials packaging.

As the ASME representative on the New Mexico Engineering Societies Presidents Council, John was instrumental in drafting and sponsoring state legislation to secure improved laboratory equipment for research and teaching at New Mexico universities. The efforts resulted in passing a \$5 million special issue for four consecutive years.

John has been active in ASME for 19 years, holding many offices in the New Mexico Section. Regionally, he has been College Relations chairman and was Public Affairs chairman for the last three years. Nationally, he has been on the ASME board of government relations and has recently completed two years on the nominating committee.

board for the past seven years and served as president in 1980. "ACLOA is an organization of volunteers," he says, "and making ACLOA work takes a lot of people with talent, some with money, and all dedicated to the ACLOA goal of bringing to the community the best professional-quality musical theatre possible with amateur talent."

Duane reports that ACLOA is undergoing a "trying time" financially — during the past two years the ticket sales have not paid expenses. "The ACLOA Amigos, a group of financial supporters and fundraisers, help make up the difference," he says. "ACLOA is a community organization and continually seeks volunteers. We can always use talent, musicians, stage crews, and people to help in the hundreds of tasks that need to be done to mount a show and run an organization."

If you would like to help, call the ACLOA office on 345-6577. The schedule of "The Pirates of Penzance" performances is listed under LAB NEWS Events Calendar this issue.

'Pirates of Penzance'

Duane DeWerff Sings Gilbert & Sullivan



Although the Albuquerque Civic Light Opera Association's production of "The Pirates of Penzance" opens on Friday the thirteenth, Duane DeWerff (5164), who performs the role of the Sergeant of Police, feels it will be a "lucky" production.

"This is the year for Gilbert and Sullivan revivals," he says. "The English-speaking world has rediscovered the fun and

pleasure inherent in the Gilbert and Sullivan musical comedies. There have been a Broadway production, two movies, a series on national television, and revivals by groups such as ACLOA throughout the country. ACLOA did 'HMS Pinafore' in 1980 and it was a great fun show, among our best."

Duane has performed in 20 ACLOA productions since trying out for his first part in 1976. "I was scared," he says. "What was an electrical engineer doing trying to sing on a stage? I had sung in a church choir and done one forgettable play in high school. That one high school play was my total theatre experience, and trying for the part took courage — stage fright is a very real thing."

Duane still feels nervous before the curtain goes up, but everyone in the cast and production is supportive. "We're all nervous," he says, "and excited. It's *theatre*, don't you see, and it's a *show*. I confess that I'm hooked."

After his first ACLOA show in 1976, Duane performed in the next six productions. He also sang with the New Mexico Symphony Orchestra Chorus for about five years and sang in the chorus of two Albuquerque Opera Theatre productions in 1977 and '78. "Now I do maybe two or three shows a year with ACLOA," he says. "It takes a lot of time — we work 15 to 20 hours a week during the eight or 10 weeks a show is in rehearsal."

Duane is also active in the business side of ACLOA — he's been a member of the

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Gutierrez Retired June 30

Leo Gutierrez retired June 30 as director of Engineering Directorate 8400 taking several records with him:

- Being a director longer than anyone at Livermore — 21 years;
- Heading more major weapons programs over the years than any other person at Sandia Livermore or Lawrence Livermore;
- Serving with Sandia longer than anyone else now in Livermore except Val Black — since 1947;
- Having an office in Bldg. 912 longer than any other management person — since it opened in 1958;
- Having more children than any other living employee at Sandia Livermore — 14.

Not bad for a man who is retired at the early age of 60, still looking forward to an active work life filling the newly created post of lay administrator at St. Michael's Church in Livermore.

Leo was a part of the "early days team" at Sandia Livermore when the young engineering lab was eager to make a name for itself in the nuclear weapons R&D business. In those days — the late 50s and early 60s, recalls recently retired colleague Don Gregson — Leo headed the Preliminary Design Division, which handled all the new weapon concepts and feasibility studies. The group worked on the W56 Minuteman, W47 & 59 Polaris, and the W38 Titan warheads for the ICBMs. All of these programs helped Sandia really make a lasting mark for itself in the nation. Don also recalls the ferromagnetic technology that was a pet project of Leo's, something that became a valuable tool in firing set components.

"Leo has a rare combination of technical ability and fundamental engineering savvy. In addition, he's an astute judge of people and their potential capabilities and contributions. These talents gave him a great overall perspective for Sandia's weapons program," Don adds.

When Leo took over the Weapons Systems Directorate, running it from 1963 to 1978 when he moved to Engineering, he had a large impact on all the weapons programs, both technically and through budgetary support. People who worked with him remember that whether they were involved in technical discussions or in personnel reviews he was always extremely fair and objective — and tempered by a sense of humor.

That sense of humor is not always intellectual. One incident that tickles Leo's funny bone is when he invited the Livermore vice president (many years ago) out to Site 300 to view a demonstration shot. It had been raining, and as his boss toured the project in a shiny new suit he slipped and fell sprawling in the mud! (The question that Leo doesn't answer is whether he roared with laughter or helped the VP out of the mire.)

Looking back at the major weapons projects he has had a hand in, Leo said the Trident series was the most exciting: "The first one especially, as the time scale was very tight and built on the prediction by those involved that 'By God, we can make it that size.'"

His interest in engineering began way



SANDIA LIVERMORE NEWS

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RETIREE Leo Gutierrez (8400) said goodbye last week. Behind him is a charcoal drawing, "Memories of JFK," done for him by one of his sons.

back in the small town of Los Lunas, New Mexico, when he got his first Model-T in high school! He used to tear it apart to see how it ran, and to this day he still loves to tackle a mechanical problem in one of his or his children's cars and solve it. "I guess one reason I like to get my hands all oily and dirty working on cars is that I have always enjoyed the engineering aspects of my job the most, especially since my administrative role at work doesn't allow that anymore," Leo says.

Leo's other hobbies include a weekly round of golf with St. Michael's Monsignor Adams, attending athletic events (he's an avid sports fan at Livermore High where many of his kids have starred in football or basketball) and reading — he has a voracious appetite for all kinds of books, magazines, and newspapers.

Why did he retire at this point? Leo claims it isn't that the last child just graduated from high school in June. "I've always thought the sooner you can do it after your 60th birthday the better, if you can manage it financially. It's not only good for you, giving you the time to pursue your

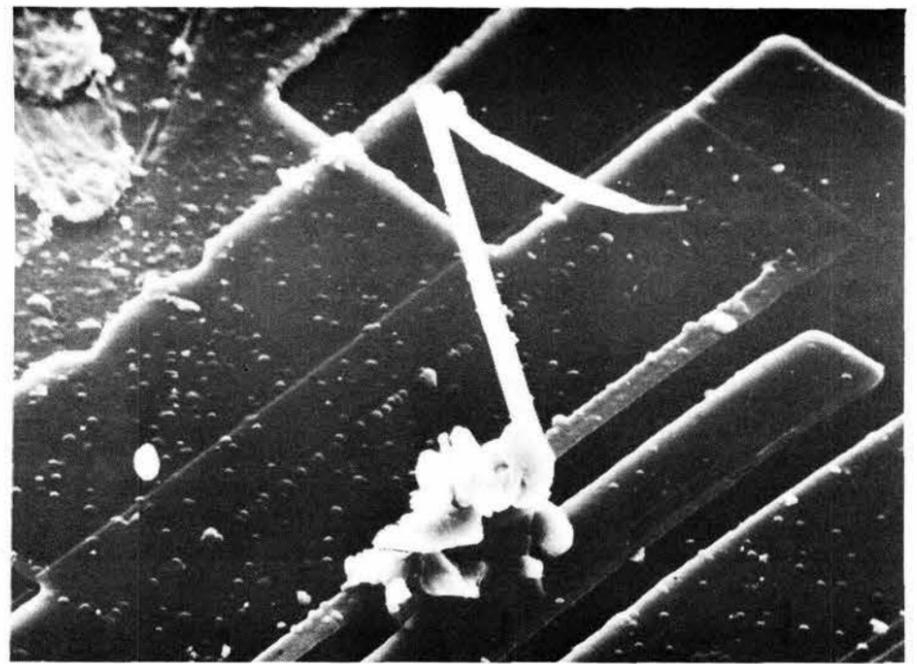
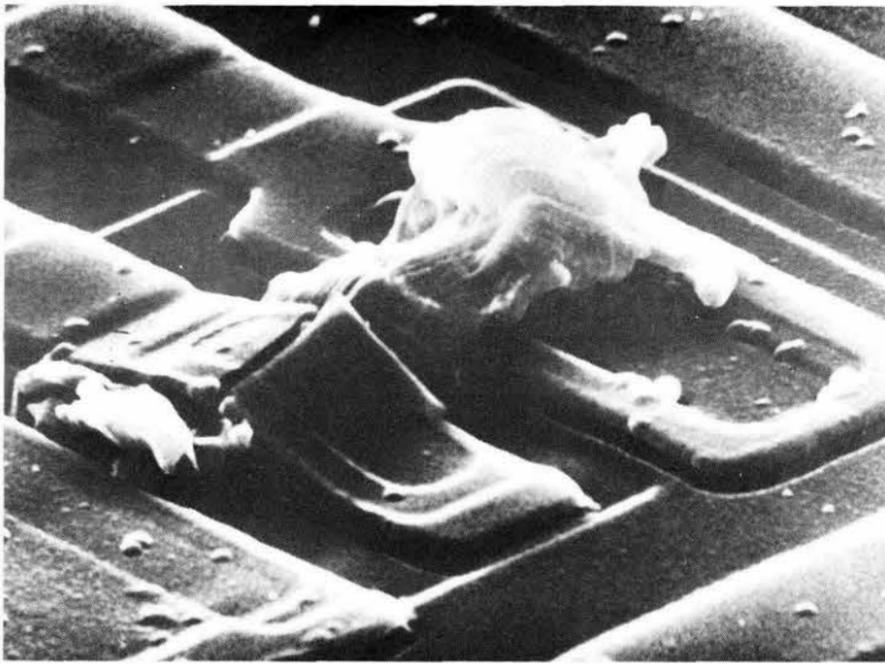
other interests, but it gives those people whose careers follow yours a chance to move up." He plans to keep busy half-time on his new venture, a quarter-time on home projects with his wife Fela, and a quarter-time just enjoying the retired life. He has also told the DOE that he would be willing to continue as the U.S. representative on an executive committee for the International Energy Agency, a post that took him overseas five times in the past year.

His parting thoughts on Sandia: "This is a great place. There continues to be an open society within this company so that you can use all your talents and still go as far as you are able, based on those talents." Over the past three decades as a supervisor Leo has helped develop a lot of talents in people, and most of them will give him much of the credit for encouraging their strengths. • BLS

Sympathy

To Marv Glaze (8260) on the death of his mother in Modesto, June 19.

To Gordon Hamman (8255) on the death of his mother in Stockton, May 22.



ELECTROMAGNETIC EFFECTS—The left photo shows an extrusion that caused a short to an adjacent device, the right photo, a whisker. Both photos

were taken with a scanning electron microscope at 2500 magnification by the Federal Systems Division, Failure Analyses, IBM Manassas (Virginia).

Continued from Page One

Electromigration

division designed it, and it's capable of doing some work that hasn't been done before. It has a better vacuum than commercially available systems and includes a lot of diagnostic instrumentation.

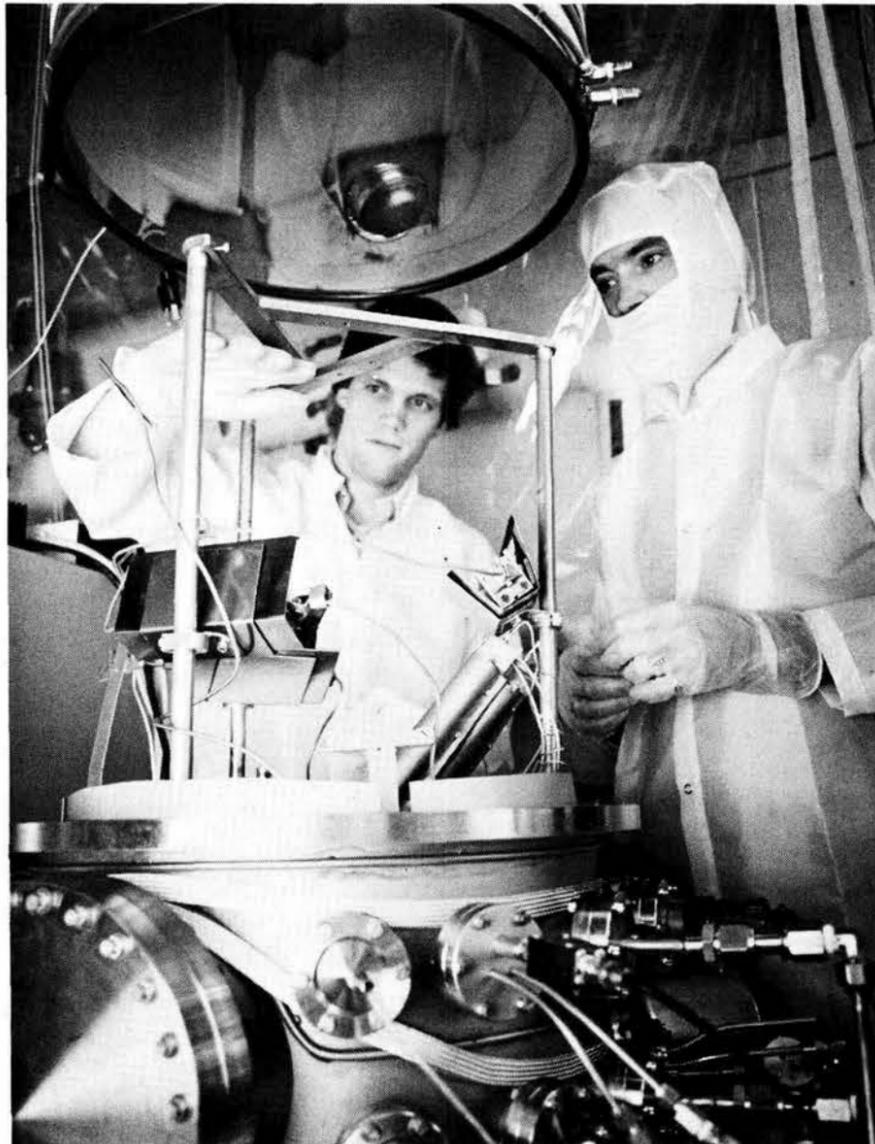
"We are developing facilities for producing state-of-the-art IC metallization," Jim continues. "We feel this is necessary because typically the semiconductor industry works with vacuums that contain 100 to 10,000 times more gas particles than the vacuums we are working with now. This means our working conditions are substantially cleaner."

One reason Jim and his colleagues are studying high vacuum processes is to learn more about the impurities in the metal interconnections on semiconductor chips, and what effect they have on the circuits.

Sometimes this work brings surprises, as when an oxygen source — and oxygen is an impurity — was removed from the location where metallization work was being carried out. "Instead of improving the circuits, the system began to work worse than before," Jim says. "Apparently the oxygen had allowed aluminum oxide to form, and this material, which is physically very hard, was now gone. The aluminum oxide was actually maintaining the strength of the conductors by preventing the movement of silicon particles present in the aluminum/silicon alloy we use."

The group is doing work at Cornell University's Submicron Facility to get an advance look at future IC technology. "At best, the metal lines that one finds in today's ICs are 1.5 microns wide; in the 1990s they may go down to 1 or 2 tenths of a micron," says Jim. "With the Cornell facilities we are able to produce metallizations typical of those we'll see in ICs in 1985 or 1990. We have already looked at metallizations far smaller than those we currently produce at Sandia."

Today, very fine metallization — that is, down to 1.5 microns — is basically a photographic process. "Unfortunately, the photographic process becomes almost impossible beyond a micron," Jim explains. "The alternative is to use direct-writing electron beams, with a device such as the Cambridge Instruments direct writing electron



HAND OF KENT SCHUBERT (1815) indicates the position of silicon wafer samples when this electron beam evaporator operates. Bearded technician Mike Taylor (also 1815) is in the mask — evaporator needs a clean environment. The chamber that Kent designed operates at about 1000 times greater vacuum than do standard production evaporators. This ultra-high vacuum allows researchers to perform careful studies of the effects of residual gases (present in the vacuum during production) on integrated circuit reliability. These effects include problems, such as electromigration, that currently plague ICs or are expected to in the future.

beam lithography system at Cornell, a \$1.1 million system produced commercially for this purpose." This machine allows much finer line widths in the photoresist mask than the photographic process, which is restricted by the wavelength of light.

Integrated circuits, complete with transistors and other components, are typically metallized within a vacuum chamber; here, atoms are boiled off a metallic source and deposited on the ICs in the form of a thin film. Unwanted metal is then etched away photolithographically, leaving a tracery of interconnections between components.

One significant result to date deals with how the lifetimes of metal lines vary with their widths. It had been observed previously that there is a minimum in lifetime near 2 microns. Below 2 microns, previous work had suggested that the lifetime increased dramatically with decreasing linewidth into the submicron range. This conclusion was

derived from limited data, and by extrapolation into the submicron region.

However, Jim explains, recent work done using the Cornell facility demonstrated that lifetimes increase only slightly for widths less than 2 microns, and remain fairly constant with decreasing linewidth for submicron-wide lines. "These results are important because technologies for the late 1980s will probably have lines one-tenth this size," he adds.

In the future, Jim says, he'll be taking a closer look at the "beneficial contamination" that results from having oxygen present during metallization. "One of the things we'll look at is the idea of purposely adding oxygen to the process," he says. "It's fairly obvious that, when you're doing metallization work, cleaner is not necessarily better. Also we'll be able to produce some exotic alloys that may have better properties than the more conventional aluminum-silicon and aluminum-copper."



PHIL RIVERA (3462-1) and FRANK NODA (325)



JOHN HOLOVKA (311) and DON LOVE (3726)

Supervisory Appointments

PHIL RIVERA to supervisor of Visitor Access and Administration Section 3462-1, effective June 15.

Phil joined the Labs security organization in October 1975 as a part-time employee. He became a full-time security inspector in June 1976. Before coming to Sandia, he was in the Air Force Security Police group.

Phil studied criminology at U of A. He served one year as president of the International Guards Union of America, Local 27. He enjoys weight lifting and keeping his Corvette in top running condition. Phil and his two sons live in the NE heights.

FRANK NODA to supervisor of Sensor Applications Division III 325.

Since joining Sandia in 1978, Frank has worked on nuclear sensors for satellite and battery-powered remote instrumentation. He will continue this work in his newly created division.

Frank received his BA in mathematics and physics from San Jose State University and his MA in physics from the University of Wisconsin. He is a member of IEEE. He and his wife Jan enjoy jogging, bird watching, and nature photography. They live in Sandia Park.

JOHN HOLOVKA to supervisor Systems Research Division I 311, effective May 11.

John first joined the Labs in 1961 as an ESA in the polymer chemistry group. He left Sandia in 1964 to complete his education, earning a BS in chemistry from NM Highlands University and his PhD in chemistry from the University of Utah. John worked for an oil company in Denver for a short time, returning to Sandia in 1970. He worked in a materials and polymer chemistry group until 1975 when he transferred to the explosives components group. Since 1979, he's been with the systems research division he now supervises.

John enjoys hunting, racquet ball, and handball. He has one daughter; he and his wife Terry (1260) live in Sandia Park.

DON LOVE to supervisor of Purchasing Division H 3726, effective June 18.

Don joined Sandia in 1963 and worked with the systems and procedures group for five years before transferring to a computer organization. Since 1970 he's worked in budgeting and auditing, most recently in Contract Auditing Division (West) 122.

He received his BBA degree from Texas Tech. He is a New Mexico Certified Public Accountant. Don enjoys movies, running, and photography. He lives in NE Albuquerque.

DOUG ROBERTSON to manager of Technical Information Department 3150, effective June 18.

Doug joined Sandia in 1963 as a staff

member in a weapons scheduling group. He was selected for a rotational training program that included assignments in integrated contractor work, purchasing, and budgeting. He served as administrative assistant for the environmental test organization. In 1973 he was promoted to supervisor of a computer division and, since 1979, has headed the Defense Budget Division 142.

Doug received his BA and MS in business from Arizona State University. He enjoys repairing cars and woodworking. He and his wife Shirley have two daughters — one a student at UNM, and the other at Sandia High. They live in the NE heights.

BRUCE WALKER to supervisor of Sensor Applications Division II 324, effective June 1.

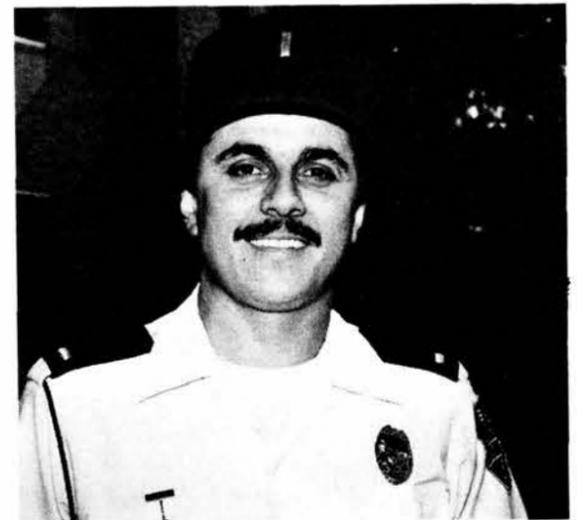
Bruce joined the Labs in July 1977 in the electronic development division. His work has been on special projects and exploratory radar designs. For the past two years he has been with Exploratory Radar Development Division 2345.

Bruce received his BS in EE in 1976 from Oklahoma State University and his MS in EE in 1977 from the University of Texas at Austin. He has completed a number of graduate courses under the Stanford video program. Bruce enjoys camping and snow skiing. He lives in NE Albuquerque.

THOMAS BACA to section supervisor (Lieutenant) in Security Operations Division 3435, effective June 1.



DOUG ROBERTSON (3150) and BRUCE WALKER (324)



THOMAS BACA (3435)

Thomas joined the security organization at Sandia in September 1981 and became a full-time inspector last December. Before coming to the Labs, he worked in uranium mines near Grants, N.M., as a probe technician for Kerr-McGee Nuclear Corp.

Thomas attended NMSU. He served four years in the Air Force security police and is a Vietnam veteran. He enjoys hunting, fishing, and horseback riding. He and his wife Gloria live in NE Albuquerque.

LISA McCARTY to section supervisor (Lieutenant) in Security Operations Division 3435, effective June 1.

Lisa joined the Security force at the Labs in October 1982 and became a full-time security inspector in November 1983. Before coming to Sandia, Lisa attended UNM where she received her bachelor's degree in business. She enjoys racquet ball, tennis, and jogging. She lives in NE Albuquerque.

Take Note

A new exhibit opens on July 8 at the Albuquerque Museum. "Carpinteros & Cabinetmakers - New Mexico Furniture 1600-1900" was assembled by the Museum of New Mexico's Museum of International Folk Art and contains various styles of furniture produced in New Mexico.

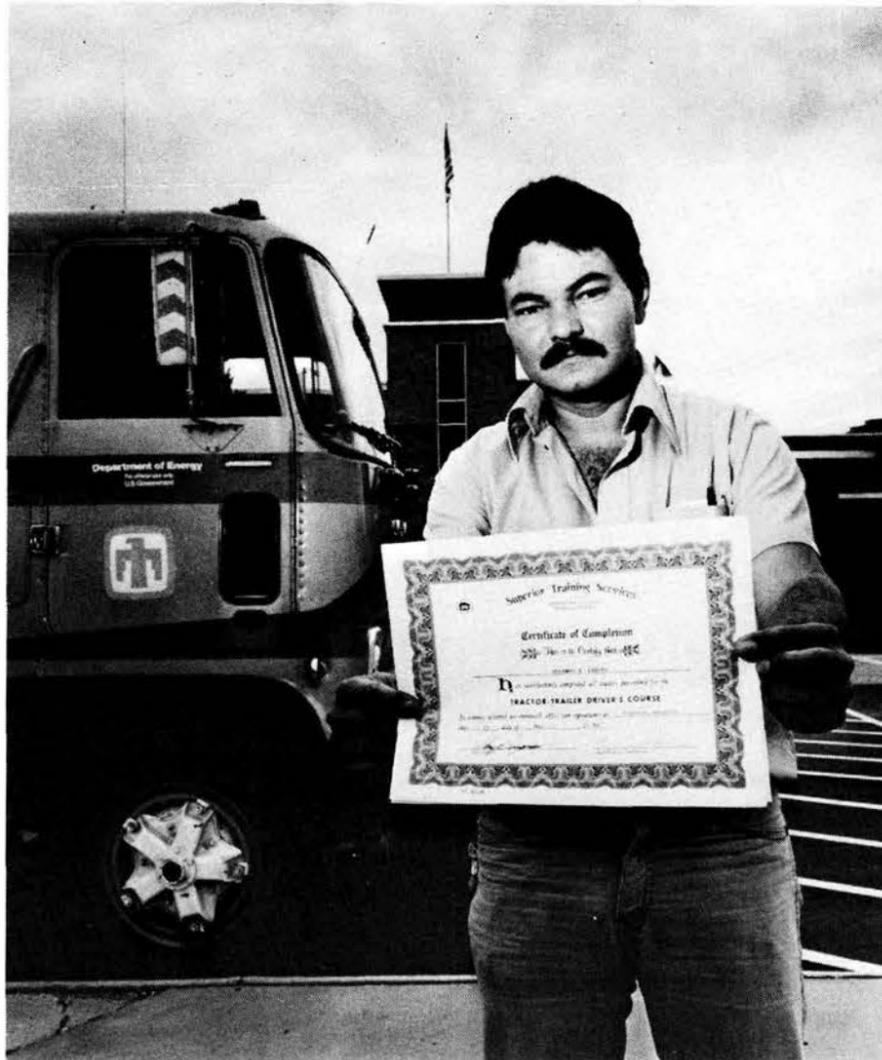
For more than 300 years, most of the furniture used by Europeans and their descendants who lived in colonial New Mexico was handmade by local woodworkers in the tradition of the carpinteros of Spain and Mexico. Furniture from the earliest periods is not represented in the exhibit because almost every piece of Spanish property was destroyed in the 1680 Pueblo Rebellion. By 1790 though, 44 carpinteros were listed as living in the reclaimed colony. Articles from the post re-conquest times are contained in the exhibit. The show runs through Sept. 12 in the Museum's East Gallery.

Cross-cultural education is the aim of a program offered at the Indian Pueblo Cultural Center this month. Using the three-room model Pueblo house on the grounds of IPCC, two five-day programs designed to introduce children to the world of the Pueblo Indian and to gain an appreciation for Pueblo Indian values will be held. A wide variety of Pueblo Indian arts and crafts, story-telling, singing, dancing, and food preparation will be included. The program will be directed by Tony Purley of Laguna Pueblo (formerly director of the AIPC-UNM Elementary Teacher Education program at UNM), and Catherine Purley, a member of the faculty at Canoncita school.

The program for children ages 6, 7, and 8 will be held July 16-20, and for children ages 9 through 12, July 23-27. Sessions will last from 9 a.m. until noon. A registration fee of \$10 covers the cost of materials used. Registration is limited to 15 children in each group. To register, contact Leona Wilson, 345-3293.

The South 14 Bookstand — In *The Spell of New Mexico*, editor Tony Hillerman has a go at even-handedness with a few citations from those who have found here something less than enchantment. For example, a certain General William Tecumseh Sherman once urged that an effort be launched to "prevail upon Mexico to take it back." And writer James Gleed detected in us "an utter lack of beauty, the startling and omnipresent ugliness of both men and women." But, having got these aberrants out of the way, Hillerman then gets down to business, presenting the reader with a paean to New Mexico, a collection of essays on our state by certified New Mexicanophiles. There's Oliver La Farge, Ernie Pyle, Harvey Fergusson, C.C. Jung and, of course, D.H. Lawrence. And more. It's in hard cover, \$9.95, and would make a nice present for your aunt in Philadelphia. Available at the LAB NEWS office, Bldg. 814.

The University of New Mexico is one of approximately 110 colleges and universities that will now receive live satellite continuing education courses provided by the In-



PERFECT SCORE, the first ever for the course, went to Orlando Chavez, a heavy-truck driver in Transportation Division 3423. It was a three-week skill course in driving semi-truck/trailer rigs, like the one in the background, and was coordinated by Superior Training Services in Phoenix. The end-of-the-course exam was a 25-mile road test, and Orlando scored 250 points out of 250. The feat was so remarkable that one examiner asked him to repeat his performance. And he did — another perfect score. Congratulations, Orlando!

stitute of Electrical and Electronics Engineers, Inc. (IEEE) through an agreement between IEEE and the National University Teleconference Network. UNM is a member of the network, a coalition of institutions of higher education that have joined to develop a telecommunications system. Through the network, member institutions can use audio, satellite video and computers to reach national audiences with programs they originate, expand continuing education programs, collaborate, develop professional opportunities for faculty and staff, and work with industries and other public and private groups.

IEEE is the world's largest technical professional society with some 250,000 members in more than 120 countries. "Project Management II — Its Impact on Your Career" and "Integrated Manufacturing Systems" are the titles of two IEEE programs that will be broadcast at UNM during the fall semester. For more information, contact the UNM Division of Continuing Education and Community Services, 277-8975.

Fort Union, the onetime guardian of the Santa Fe Trail in northeast New Mexico, will bring together several living history groups to stage costumed demonstrations of routine soldier life, flag ceremonies, and parades on July 28-29. The former fort, today a National Park Service national monument, was founded July 26, 1851, when Lt. Col. Edwin Sumner, commander of Fort Marcy in Santa Fe, declared that he had to move his men out of "that sink of vice and extravagance" so that they could concentrate on the defense of the Santa Fe Trail. For 40 years, Fort Union was one of the largest forts in the Southwest.

Special bus tours from Santa Fe to the first of the three fort sites (an area usually closed to the public) will be available during the celebration. Self-guided tours are available to the second site — the star fort

with its eight-pointed structure — and to the third fort, which has more than 60 buildings. For more information call 1-425-8025.

The American Association for the Advancement of Science published the *Resource Directory of Handicapped Scientists* (1978), which lists names and other helpful data about handicapped scientists. Over 10,000 copies have been distributed throughout the U.S. The Directory is still in demand by schools and employers seeking to provide better access to disabled students and employees. However, the supply is running low, addresses have changed, and many disabled scientists identified after 1978 are not included.

An updated edition of the Directory will be published this year. AAAS needs to identify as many disabled scientists and students as possible. They need names and addresses of: disabled persons employed as scientists (including natural, physical, behavioral, social), engineers, and mathematicians; disabled students in colleges and universities; and those who are doing graduate work in science, engineering, or mathematics.

Please identify yourself or someone you know who meets these qualifications. AAAS will contact those persons identified; AAAS will not use, without permission, the names of individual scientists who respond. Please send names and information to Project on the Handicapped in Science, AAAS, 1776 Massachusetts Ave., NW, Washington, D.C., 20036.

The Santa Fe Chamber Music Festival opens its 12th season, July 8-Aug. 17, at the St. Francis Auditorium. Twenty-seven artists from all over the US and Europe will gather in Santa Fe to perform with the Festival. A copy of the schedule is available in the LAB NEWS office, Bldg. 814, or call the Festival Box Office at the La Fonda between 11 a.m. and 3 p.m., 1-982-1890.

Up to 45% Discounts

AT&T Phones On Sale

The full residence product line of AT&T telephones will soon be available to all active and retired Sandians. As announced by AT&T, this Employee Discount Telephone Sale Program provides discounts up to 45 percent.

Active employees will receive the Employee Sale Program catalog at their work locations within the next week or two, and retirees will receive their catalogs at their homes this month. The sale ends Dec. 31.

The 24-page color catalog, distributed by AT&T Consumer Products Customer Information Center in Indianapolis, features discounts on all AT&T residence products — from the basic traditional, Princess®, and styled Trimline® phones to the entire family of Design Line® phones, including the Showcase™ Olympic Commemorative phone with the option of pewter or bonded bronze sculptures depicting Olympic highlights.

The Employee Sale Program also includes feature and functional telephone families, such as the Touch-a-matic® phones, the Nomad® cordless phones, the Telehelper™ 1600 automatic dialer, and the Telehelper® answer and record units.

One of the newest AT&T products, the Genesis™ telesystem, with state-of-the-art touch-sensitive keypad and programmable console, is also offered through the program. So are the Emergency Call System-Smoke/Alert and the Emergency Call System Medical Alert.

Customer Convenience Products are also included: six-foot and twelve-foot handset cords in a variety of colors, plug-in converters, modular jack converters, and a variety of modular jacks.

The catalogue includes ordering instructions and an order form. Payment can be made by personal check or money order or through American Express, MasterCard, or Visa. Those who order products will receive an additional form with each item purchased.

Sandia will not handle the Employee Sale Program directly. If more product information than the catalog provides is needed, questions should be directed by mail to the proper address shown on the order blank. All contacts regarding the ordering of telephones will be between the employee or retiree and AT&T Customer Information Center in Indianapolis.

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Death



Remijio Garcia of Plant Modification Division 3613 died June 10 after an illness. He was 24.

He had worked at the Labs since April 1980.

Survivors include his wife and two sons.



GRADUATION TIME — Major Ron Maull of the Air Force Institute of Technology completed his nine-month training program on the whole cycle of nuclear weapon development at Sandia recently. He received confirmation of his achievement in the form of a certificate presented by the supervisor of the division to which he's been assigned, George Stone (left) of Systems Research Division 312. His next tour of duty is at the Air Force Technical Application Center in Florida.

Medical Corner

Summertime - And the Breathin' Is Wheezy?

It's not New Year's resolution time — it's summertime — a time to play, shape up, have fun, or forget it all. But do yourself a favor — whatever you're doing, resolve to quit smoking.

Medical's next Quit-Smoking Class will be held July 16 through Aug. 8, Mondays and Wednesdays from 12 - 1 p.m., in the Personnel conference room. To sign up, please call Arlene Price at 6-0021.



Clara Blasyk (3733)

RETI
RING

Feedback

Q. When the conversion to biweekly pay was made we were told that it was a cost-saving measure. I was upset because I had to adjust my budget accordingly. After spending the last year adjusting to it, I now enjoy it, especially the twice yearly three paycheck months. Now we are told that there is another change coming. I wonder how many people really welcome another change. Why not do this in a democratic fashion and allow the employees to vote on which two of the three choices — biweekly, bimonthly or weekly — pay methods they would like?

A. Sandia management considered an employee survey to determine which pay options to offer. Management felt, however, that we could not justify providing more than two payroll options due to the complexity and cost involved. From employees' comments and suggestions during the past year, it was felt that the two options selected — weekly and semimonthly — would meet the desires and needs of the largest number of employees. We realize that there are employees who, as you say having adjusted to it, would prefer to stay with the biweekly payroll. However, the selected options offer improvements over the current biweekly payroll and yet provide similarities in frequency of pay.

We already have a weekly system that can be utilized by annually rated employees

who prefer to be paid frequently. The weekly option also provides a 5th payday four times a year which is much like the "yearly three paycheck months" you like about the present biweekly system. The semimonthly pay eliminates the one-week delay in payment — a condition many employees strongly opposed.

Based on the above considerations, management decided not to conduct the employee survey.

P.M. Stanford — 100

Q. The Base sticker that I got from Sandia Security for my new bike is immense. It would wrap around the bike's tubing several times. How about a special sticker for bikes, say about 1" x 2"?

A. In response to your feedback, Access Control Division 3462 contacted Senior Master Sgt. Ward of the 1606 Security Police Squadron, KAFB. He indicated that base regulations no longer require bicycle registration, but that they continue to provide the service so that the base has a listing of owners in case of theft, etc.

As an alternative to the Sandia decal, the Air Police will grant base access upon showing your Sandia identification card. Hope this is a satisfactory solution to your problem.

C.L. Brumfield — 3400

Traveling the Medicare Road

By Ted Sherwin (Ret.)

Getting a Medicare claim settled, even for rather ordinary treatment, can be a prolonged and frustrating undertaking. If the treatment involves several doctors, progressing from general practitioners to specialists, and perhaps second opinions, then results in hospitalization and maybe surgery, the insurance problems are compounded into a fullblown nightmare. Having had some experience along those lines recently, I offer some suggestions that may save others in similar circumstances some time and anxiety.

As noted in previous columns, Sandia retirees are lucky to have a health care plan that is provided at no cost to us. The Equitable plan covers much of the cost of medical treatment and hospitalization not covered by Medicare. The problem is that you must first submit claims to Medicare. Then, when the settlement is made, you have to send that information to Equitable, along with certain details of the treatment, before the supplemental can be paid. Given the slowness of Medicare claims, this process can take from one to four or five months.

Here are a few points that may seem elementary to those who have been down the Medicare road, but they can be confusing to those making their first efforts to settle a claim:

Doctor Bills: Most doctors do not accept assignment of Medicare benefits. This means that you are expected to pay the doctor when service is rendered and collect your insurance if you can. Some doctors who have treated you over a period of time may bill you by the month, but most of them expect to be paid immediately. So, you pay, get a receipt and an itemized bill, then fill out a form and send it to Medicare. (Note: you don't send *all* Medicare claims to one address; medical bills go to one location, hospital bills and in-hospital treatment bills to another.)

Hospital bills: If you are admitted to a hospital, you fill out forms the hospital needs to establish financial responsibility. If you have Medicare the hospital will normally file the claim for you, and Medicare is very good about covering almost all reasonable hospital charges, except the deductible. For some reason these hospital bills seem to get settled quicker than the doctor bills, perhaps because they are handled by a different insurance carrier. As mentioned above, you will be dealing with Medicare at different addresses for hospital bills and for medical bills. Normally, you will not have to file your own claim with Equitable for hospital treatment because the hospital will file that claim for you as well.

Outpatient treatment: In most hospitals the charges for hospital services will be billed to Medicare by the hospital. You will be asked to pay the amount estimated to exceed Medicare's authorization. You will receive separate bills from doctors performing examinations or treatment, and you must send these bills to Medicare and subsequently to Equitable. Unfortunately, in contrast to Medicare payment for hospital treatment, only about half the amount bill-

ed by the doctor will be reimbursed by Medicare. Equitable must be billed for the supplemental.

In-hospital doctor bills: If you are admitted for surgery or a medical procedure, the doctor's office will usually file your Medicare claim for you. This is best, because the doctor needs to explain your treatment in some detail. The doctor's office may also file the Equitable claim after the Medicare claim has been settled so you will have a copy of that settlement, which can be attached to the Equitable form along with the doctor's statement. It is unwise to try to file the claim directly with Equitable if the treatment in the hospital involved major surgery or treatment. A simple line item on a monthly statement from the doctor's office will not give Equitable enough information, and you will get the form back with a request that a doctor's explanation be attached. If there are other doctors involved in the hospital treatment (such as an assisting surgeon, anesthesiologist, radiologist, neurologist, therapist, etc.), you will receive separate bills that you must file with Medicare. Be careful to send them to the right address!

Because so many different providers get into the act when you have a major health problem, the paper work required to get the insurance claims settled can be extremely confusing as well as protracted. You find yourself saying: "Didn't I pay that already?" "Did I file that with Equitable?" "Have I received payment for that?" A fairly simple way to keep track of the many pieces of paper involved and to track the progress of claims is to draw up a list of providers on a sheet of paper. List them down the left margin, by category: doctors, therapists, hospitals, etc. Across the top make column headings as follows: Amount billed, paid by Medicare, paid by Equitable, paid by me. If possible, leave room to show dates of all actions, and if you have a wide enough sheet you can show dates on which you filed with Medicare and Equitable.

Such a spread sheet will give you a bird's-eye view of where you stand at any time in your paperwork struggle, and it will be a big help to you at tax time, too. One final point: even with such detail, you should keep copies of all correspondence and forms you submit for insurance purposes. You never know when you may have to come up with a duplicate.



LINDA BRANSTETTER (1524) emerged in second place out of a field of 16 finalists in the recent Albuquerque City Women's Amateur Golf Tournament. In the qualifying round she was first, the medalist, with a low two-over-par 76 at Paradise Hills Country Club. While earning her master's degree in civil engineering at Purdue, Linda was the Indiana Amateur Champion in 1979.

Fun & Games

Golf — SGA's annual Fred Given Memorial Tournament was played June 16 with these first and second place flight winners taking the honors: Linda Branstetter (1521), Ron Rodeman (7543), A flight; Jim Schwank (2144), Gary Willingham (ret.), B flight; William Brooks (1221), Ken Sutton (ret.), C flight; Jerome Ford (3154), Donald McBride (1634), D flight; and Gerald Ward (3154), Andrew Quintana (3412), E flight.

SGA's next tournament will be the "SGA Open" (individual format) on July 15 and 16 at both Arroyo del Oso and Paradise Hills. For details, contact Kevin Linker (6227).

Tennis — The Sandia Tennis Association announces a mixed doubles tournament July 14-15 at the Coronado Club Courts. Entry fee is \$4 per couple (plus \$1 for new STA members, \$1 for non-Coronado tennis club members). Deadline for signing up is July 11. Call Tim Mooney (5144) at 268-7628 for details.

Baseball — Sandians and their friends are invited to join KAFB for Dukes Night on Aug. 3. The Dukes play the Hawaii Islanders, and tickets are \$2.50 (rather than \$3.50) for box seats. Pick up tickets at the Que Pasa Recreation Center (between the Coronado Club and the hospital).

Events Calendar

July 9 — Lecture Under the Stars: Robert Townsend, "A Sneak TV Preview — Hemingway," 8 p.m., NM Union Ballroom, UNM; July 16 — Dr. Robert Thompson, "Aging in the Best Possible Way," 8 p.m., Central Mall, UNM.

July 12-15 — Food, Beverage, and Recipe Festival: a traveling exhibit of things to eat and drink, demonstrations on food preparation, and recipe hand-outs, Winrock Center Mall.

July 13-15*, 20-22*, 27-28 — ACLOA's "Pirates of Penzance," 8:15 p.m., *2:15

p.m., Popejoy.

July 14 — NM Symphony Orchestra, "The Magic of Music," with Pady Blackwell's "Dreamstuff Puppets," of NY, 1:30 and 3:30 p.m., KiMo.

July 14 — Annual San Buenaventura Feast Day, corn dance, Cochiti Pueblo, contact pueblo.

July 14, 28 — Santa Fe Desert Chorale concerts, 8 p.m., Keller Hall, UNM.

July 20 — The Chamber Orchestra of Albuquerque concert, 8:15 p.m., Albuquerque Little Theatre.

MILEPOSTS

LAB NEWS

JULY 1984



Sidney Thomas (7130) 30



Saul Skolnick (2154) 15



Jace Nunziato (1510) 15



Charles Tapp (5140) 20



Henry Dodd (6252) 15



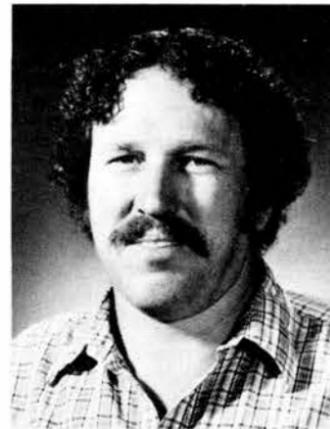
La Rue Wildgoose (3661) 35



Bill Peay (7653) 35



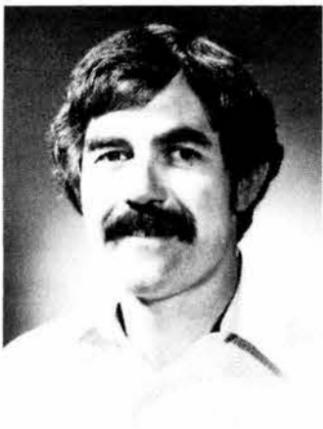
Bob Bradley (5165) 15



Walt Simpson (1264) 10



Mike Robles (2613) 15



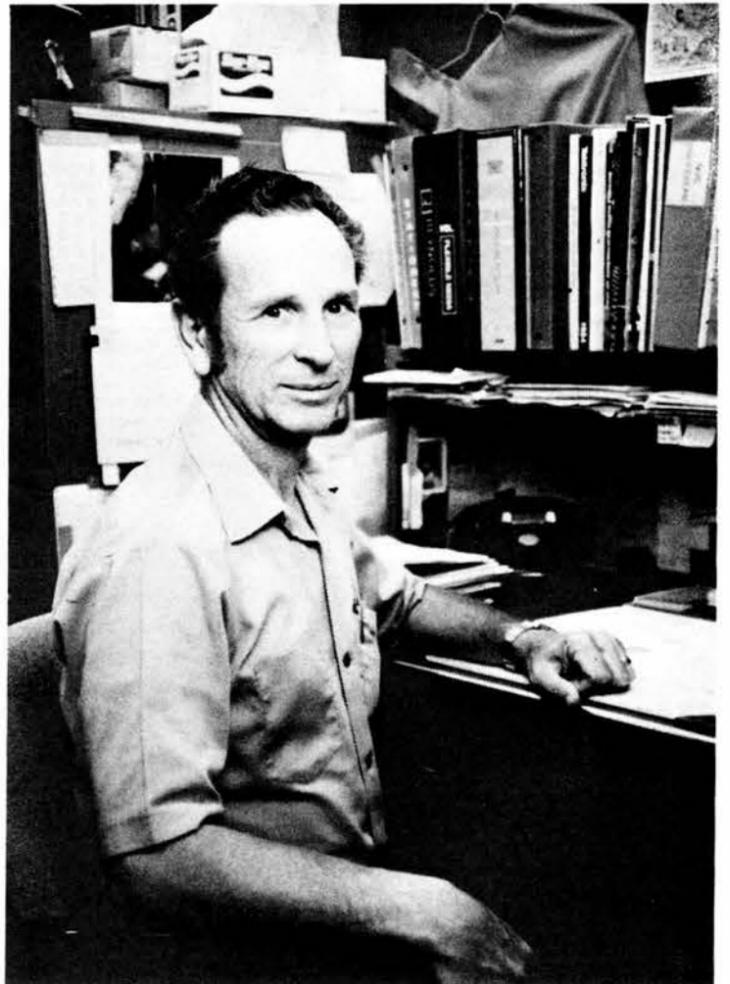
Jim Caruthers (5165) 15



Willie Servis (3144) 20



Florence Bonnell (4020) 30



Ray Peabody (7132) 25



Fred James (5312) 20



Marv Beckett (6041) 25



Michael Hall (5124) 10



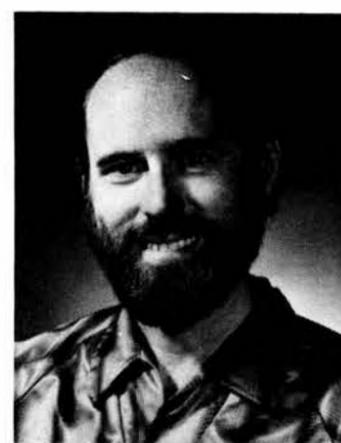
Richard Jones (2346) 30



Rick Beasley (6257) 25



Dennis Reynolds (5321) 15



Bruce Hansche (7551) 15



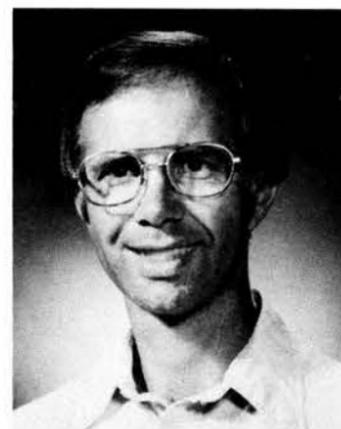
Dirk Dahlgren (6440) 20



Ken Ludwick (3613) 25



Ronald Ewing (316) 25



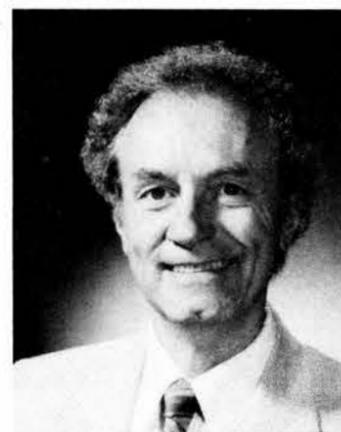
Dave Preston (1653) 20



James Bushnell (1623) 20



Wayne Sebrell (311) 25



Clifford Diem (7626) 25



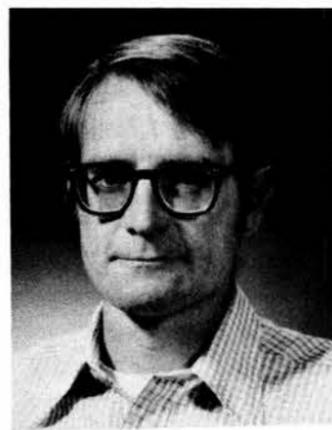
Leroy Tafoya (2142) 10



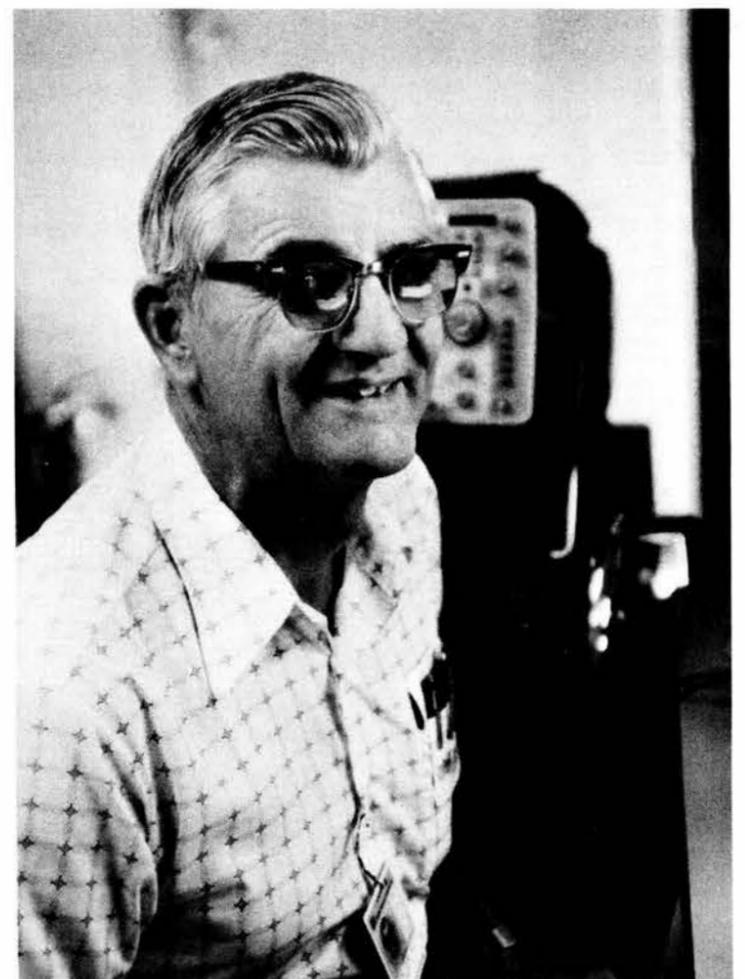
Mary Ann Sweeney (1265) 10



Jay Anderson (3312) 25



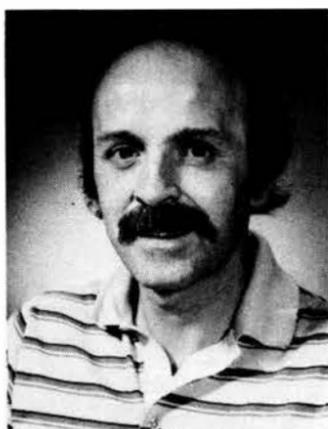
Gerry Quinlan (2642) 15



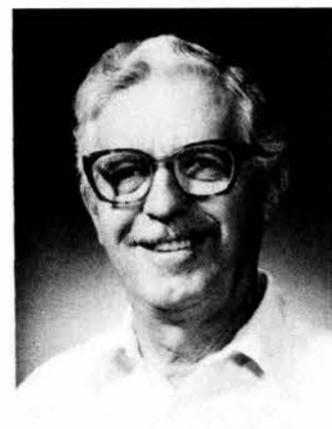
Walter Wyant (5311) 25



Larry Puckett (7654) 15



Michael Hosking (1833) 10



Calvin Cox (7137) 35

Ex-NATO Chief Talks On European Defense

In a recent colloquium, West Germany's Gen. Franz-Joseph Schulze gave his views on improving NATO's defenses in central Europe. From 1977 to 1979, Schulze was Commander-in-Chief, Allied Forces, Central Europe. The general, together with McGeorge Bundy, Michael Carver, Andrew Goodpaster, and Milton Katz, was a member of the Steering Group for the European Security Study which produced the book *Strengthening Conventional Deterrence in Europe*, published in April 1983.

Among his current activities, Schulze is serving as a consultant to the European Conflict Analysis Project being conducted by Sandia and West Germany's Stiftung Wissenschaft und Politik. This project is a joint study of the utility of conventional and nuclear weapons in Central Europe.

A selection of Schulze's remarks:

The heated and often very irrational debate surrounding the peace movement (which is not as big as German TV presents it) has forced us to teach long-learned lessons again. Deterrence is credible only if backed up by capability and the determination to defend ourselves. Conventional de-

fenses cannot make nuclear weapons obsolete, but we must increase our conventional capabilities to make our response more flexible.

No weapon is exclusively deterrent or political. The essence of deterrence is the determination to use *any* weapon. This determination must be made credible — and nuclear weapons are an indispensable element of our deterrence capability.

We must prevent *any* war, conventional or nuclear. Improved conventional capabilities are a precondition of effective response — to prevent escalation of hostilities to a nuclear exchange.

For a swift termination of the conflict, the defender must retain the option to use nuclear weapons. However, a defense based solely on nuclear weapons is dangerous.

Any Warsaw Pact attack would be met by the forces of several nations. The aggressor should not be allowed to direct his attack toward one nationality. We must maintain this force structure.

Western Europe has limited depth in its defense. Therefore the enemy's mobility must be stopped before his attack gains

momentum.

To improve our military position, we don't have to match the Warsaw Pact tank for tank. We must study the weaknesses and vulnerabilities in Soviet and Warsaw Pact strategy. The Soviets depend on surprise; to this end they maintain a large fleet of attack helicopters. So we would strike at their bases at the first possible moment. The attacker must be aware that his territory would not be a sanctuary. For this we need to improve and integrate our air defenses.

Almost all NATO nations are facing severe budget constraints. Manpower resources are shrinking dramatically; the Bundeswehr will be faced with a shortfall of 100,000 men.

The Soviets have a severe face-saving problem at the moment. They staked everything on the peace movement. They won't return to talks right away. The Soviets want all new weapons withdrawn before they agree to resume talks. This is an irrational proposal.

I've never been a pessimist — sometimes a desperate optimist.

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6. No commercial ads, please.
7. No more than two insertions of same ad.
8. Include name and organization.
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MISCELLANEOUS

- FUNK and Wagnalls encyclopedia, 27 vol., incl. index, 2 vol. dictionary, \$20. Dieter, 255-8056.
- ELECTRIC chain saw, \$30; desk & chair, \$40; recliner, \$35; childcraft, \$50; night stand, \$15; polaroid camera, \$20; floor shampooer/polisher, \$30. Gaither, 298-1043.
- CUSTOM 6.5x55 m.m. Swedish Mauser rifle, 6 power scope, sling, ammo, \$200; new 25 cal. auto. pistol, \$50. Brown, 296-9009.
- CAR top carrier, 19 square feet, water tight, lockable, light weight, \$30; Bell helmet, size 7, \$25. Prior, 296-2930.
- OFFICE desk, dark formica, 30"x60", \$150. Breece, 296-9495.
- WINDOW guards, decorative wrought iron, 1 ea. 4'x6' with locking mechanism, 1 ea. 4'x6', 1 ea. 4'x4', 1 ea. 3'x4'. Lamberson, 298-5337 or 299-8677.
- EXTENSION ladder, 28' aluminum, \$32; pick-up cart, 2 wheel for yard or garden, \$8. Henry, 266-6467.
- JAYCO 23' travel trailer; cartop carrier; dome tent, sleeps four; porta potti; ice chest. James, 294-6837.
- MICROWAVE cart, solid hardwood, 3-shelf, castors, handles, retractable cutting board, \$30; TV stand, pedestal style, castors, \$10; AT&T rotary desk phone, white, \$10. Robinson, 255-0114.

- SWIMMING pool, Sears 18 ft. diameter above ground pool, ladder, filter with spare cartridges, skimmer, vacuum, cover, \$390. Adams, 294-9631.
- WIRE wheel disks, 14", \$20 OBO; red-wood handmade table for children, \$20; corner sofas with bolsters, cover. Atkins, 298-5762.
- KENMORE dishwasher, needs work. Smith, 821-5534.
- CAMPER ice box, built-in type, approximately 2.2 cu. ft., \$20. Rayner, 821-5534.
- NAUGAHYDE sofa & love seat, brown, \$250; 12'x15' oval swimming pool, includes pump, filter, ladder & sweeper, \$100. Wright, 292-5478.
- GIANT garbage bag full of girls size 3 & 5 clothes, \$25; twin bedspread, canopy cover, pillow sham, matching curtains, \$20 OBO. Shaw, 299-8524.

- PIANO, 1917 Holland upright grand, "plain Jane" cabinet, appraised \$800, will consider compromise, welcome go get own appraisal. Johnston, 294-4574.
- SEARS fireplace blower, \$40. Shapiro, 821-2936.
- SELMER wooden clarinet, \$150. Zanner, 281-1789.
- NEW Armstrong design/solarian no wax flooring, almond/white tile pattern, 6'x8'7", 5 2/3 sq. yds., \$30. Bursstein, 821-6688.
- SOFAS, two, loveseat size, Spanish style, red velvet upholstery, \$125. Rieden, 294-2514.
- MONTGOMERY Ward light plant, 350 watt 110VAC, electric start, \$125. Meikle, 299-4640.
- ALUMINUM boat, 12', \$150; plow, Ford 3 pt. hookup; AQHA horses, \$150. After 6, Jolly, 1-684-2430.
- SHOTGUN shells, 10 boxes, 1/4 oz., 7 1/2 shot, Winchester Super-X, \$40; guitar, Spanish electric, Airline, six-string, \$65. Hernandez, 268-5000.
- HOME accountant, runs on Apple IIe, \$45. Stevens, 821-6167.
- TWO portable electric typewriters, 1 needs repair, \$30 & \$60; child's portable record player, \$30; girl's dresser desk, \$100; 2 kitchen light fixtures, \$25 ea. Church, 299-2175.
- MAGNAVOX 19" color T.V., \$175; GE portable dishwasher, \$75. Campbell, 888-3135.
- WURLITZER organ, 1976 model, \$750. Rael, 299-0343.
- TWO club chairs, 1 swivel, \$40 ea.; ladies tan Samsonite luggage, hard-sides, pullman has suitcase, \$35; O'Nite \$25. Easton, 256-7717.

- LAZY boy recliner rocker, \$100. McLellan, 266-0266.
- FRANKLIN wood stove, chimney, will deliver. Ginn, 883-0004.
- BOAT, 18' 1972 Silverline, inboard/outboard Chrysler engine; v-hull, new upholstery, \$4000/negotiable. Padilla, 268-1921.
- EXERCYCLE, Sears 6K28704N, speedometer, odometer, roller resistance system, adjustable seat, handlebars, \$50. Allen, 296-6453.
- COMPACT refrigerator, 3.5 cu. ft., woodgrain finish, \$125. Childers, 344-9281.
- FREE to good home, seven months old, part malamute, part collie, good disposition, has been spayed. Liguori, 256-3613.
- DIAMOND, 1.07 ct., G, VS2, GIA/EGL certified investment grade stone at wholesale jewelry price. In CU safety box. Dippold, 821-5750.
- BUNDY flute with stand, \$100. Lewin, 898-2303.
- LAWN mower, 3 1/2 hp., 20" Lawn Chief Rotary, \$75 OBO. Shire, 821-8460.

- FERRETS, 9 weeks old, \$35 ea.; miniature Dutch pet rabbit free to good home. Widenhoefer, 298-2510.
- APARTMENT size Frigidaire Delux food freezer, 58 x 25 x 27, \$175. After 5, Mosteller, 256-3227.
- PONTOON boat, garageable, 6 x 12 ft. deck w/all controls for electric start, 15 hp Evinrude, complete with canopy, trailer, accessories, \$3995. Meidal, 255-6690.
- CAMPER for long wide bed, has ice box, cabinets, closet, and storage under beds, \$300. Edwell, 292-1762.

TRANSPORTATION

- '80 SUBARU DL hatchback, AT, A/C, AM-FM cassette, \$3500. Christopher, 299-5712.
- '76 KAWASAKI KH 500 3 cylinder, 2 stroke cafe racer, accessories, \$1000. Tolman, 296-8239.
- GIRLS Ten speed bicycle, \$49. Church, 299-2175.
- VESPA 125cc motorscooter, one owner, 95 mpg, 55 mph, \$200. Ginn, 883-0004.
- '77 MONARCH, A/C, auto PB, PS, 302 V8, \$1995 OBO. Garcia, 293-3937.
- '65 AUSTIN Healey Sprite, needs some work, best offer over \$1000. Beegle, 296-5300.
- '82 SUZUKI 500 SP, 2600 miles, \$1800. Tafoya, 298-6208.

- VAN econoline 150 Ford, PS, PB, A/C. Gallegos, 821-7351.
- '83 HONDA Shadow 500, under 2000 miles, \$2000 firm. Brown, 298-0531.
- '76 PENTON 400cc, MC5, \$500. Wright, 296-3850.
- '48 JEEP Willy's CJ2A Ford V8, rollbar, skid plate, tow bar, \$900. Crompton, 299-5569.
- '79 924 PORSCHE, 5-speed, A/C, sunroof, sheepskins, new tires, 49K miles, will negotiate. Moss, 293-5691.
- '76 MERCURY Bobcat, AM/FM cassette stereo, 4-speed, 4 cylinder, \$1200. Meyer-Hagen, 262-0496.
- '77 DODGE stn. wgn., PB, AT, PS, 52K miles. Kaushal, 821-2584.
- '82 KAWASAKI LTD, belt drive, 6500 miles, windshield & casesavers, \$1200. Jarrell, 293-9671.
- '74 VW SUPER beetle, \$1900. Breece, 296-9495.
- '83 BMW R100RT motorcycle, 11K miles, smoke silver, loaded, \$5350. Hillman, 888-3565.
- '76 VW WESTFALIA "poptop" camper van, 2 double beds, hammock, 18-20 MPG, 2000cc engine, \$3975. Asprey, 296-6673.
- '79 PONTIAC Sunbird, 6 cyl., AT, AC, \$1995. Brunner, 296-6617.
- '58 CHEVY Belair, 235 eng., recently rebuilt eng., 2-door, new tires, \$1800 OBO. Molina, 864-2148.
- '72 FORD stn. wgn., 108K miles, radio, air, power, best offer, Holmes, 292-0898.
- '84 RANGER 5-speed, \$500 & assume payments of \$195/month. Tafoya, 843-9483.
- '82 ISUZU PU, 20K miles, PB, PS, AC, AM-FM cassette, 5-speed, lgbed., chrome bumpers, trailer hitch, \$5500. Hernandez, 268-5000.
- '70 FAN travel trailer, 19', completely self-contained, awning, AC, new battery & tires. After 5, Hackard, 299-4333.
- '69 SUZUKI 350, 2200 miles, \$575. Shapiro, 821-2936.
- '78 MERCURY 3-door, AT, A/C, CB radio, PS, PB, \$1750. Shoemaker, 255-8820.
- '72 MAZDA RX-2 4-door, mag wheels, 185/70-13 tires, trailer hitch, 75K miles, overhauled at 50K miles, \$1K, will consider offer. Clark, 294-3112.
- '72 TRIUMPH 650 Bonneville, rebuilt & customized. Gonzales, 344-4933.

REAL ESTATE

- 3-BDR, 1 bath, den w/fireplace, new oak parquet floor, 1250 sq. ft., S.E. location, \$55,000. Mareda, 266-9186.
- '77 LANCER 14'x72', MH in Four Hills Adult Park, 2-bdr., 2 bath, custom drapes, ceiling fan, covered patios, garage, extras. Bone, 293-2214.
- 3-BDR home, NE Heights, extras. Collins, 292-0495.
- 1.13 ACRES on north Rio Grande Blvd., irrigated with city utilities, below appraisal. Hillman, 821-9043.
- 3-BDR, 2-bath, study, large house, NE, near base, \$63,000, \$8000 down, assume existing 12% loans. Pershall, 299-0482.
- 5 1/2 FORESTED acres, REA power, 17 miles west Las Vegas, 7400 ft., \$13,500-terms. Parker, 255-5923.
- 5 ACRES in back of Sandia Knolls Sub-division, water, power, southern exposure, no closing costs. Zanner, 281-1789.
- SOLAR building site, one acre, mountain view, 6 minutes from Sandia, 8 minutes from Winrock. Westman, 881-0471.

WANTED

- WATER skis and tow rope to rent for Lake Powell vacation during the week of July 22 to 27. Zanner, 281-1789.
- EXPERIENCED concrete finisher to widen driveway, forms are complete, commercial concrete can be used. Fisher, 881-8072.
- ROOMMATE, will have to find place together, available to move end of July, have furniture. Chavez, 294-7331.
- EXHIBITORS/ARTISTS — Annual Mountainfest Arts & Crafts Fair at Mountainside United Methodist Church, Cedar Crest — Sept. 8. Mason, 281-3947.
- HOT water heater for RV, 5 to 8 gal., propane. Stevens, 821-6167.

WORK WANTED

- YARDWORK, teenager, have references, Atkins, 298-5762.

SHARE-A-RIDE

- RIDERS from the Corrales-Rio Rancho area, ride in my van for \$1/day, only when you ride. Mowry, 892-6226.

Annual Luau Set Tomorrow

TONIGHT at Happy Hour, barbecued beef ribs is the dining room special at \$5.75. Included are baked or French fried potatoes, vegetable, rolls, and coffee or tea. Selections from the Club's regular menu are also available along with diet entrees and several kinds of hamburgers. Western Flyer is on the bandstand playing danceable country and western tunes. Karen Edwards instructs free western dance lessons from 7:30 until 8:30. Next Friday, June 13, a big eight-piece Latin band called the Bourget Brothers is booked while Chef Henry turns out his famous Rio Grande style Mexican food combination dinner. At \$5.75, it's time to live it up.

THE CORONADO CLUB LUAU, one of the really big parties of the year, is scheduled to start tomorrow with cocktails around 5:30 p.m. in the new covered patio area. The Pearls of the Pacific, the national show band that presented an outstanding performance at the Club a couple of months ago, returns with a full troupe of singers and grass-skirted dancers. Manager Mitch and Chef Henry plan a feast — roast pig, sweet and sour white fish, Hawaiian chicken, spicy Szechwan beef, Polynesian crabmeat salad, baked bananas, Waikiki peas, tropical salad, and wild rice. Break out your own grass skirts and Hawaiian sports shirts. You can still make reservations. Call 265-6791 *right now*. The tab is \$12.95 per person and includes dinner, entertainment, and dancing. (Please enter through the swimming pool gate.)

SEAFOOD NIGHT, Thursday, July 12, offers an all-you-can-eat special on fish and chips for \$5.65. Or choose broiled halibut for \$6.95 or scallops Mornay for \$7.25. On Thursday, July 26, a crab night special is planned. Snow crab, Dungeness crab, and king crab will be featured. These Thursday evenings are some of the most pleasant events the Club offers — the best in seafood, friendly service, a candlelit atmosphere, and the price is right. Reservations help. Please call 265-6791.

GOURMET NIGHT (Club 35) is the best buy in town. Consider these facts: the food is great, total gourmet quality; it's served with style and friendly smiles; before dinner there's a wine taste or cocktail hour with cheeses and goodies; and after dinner there's brandy or an after-dinner drink. All of this plus the candlelit elegance of the new Eldorado room goes for a mere \$35 per couple. On July 17, Club 35 has its choice of filet of beef with quail or veal shank Coachella. Cold strawberry soup is something you don't see every day and how about smoked trout salad? Then try cranberry mousse for dessert. There will be 35 couples enjoying all this. The first 35 couples to make reservations are the Club 35 members for the month. Call 265-6791 to sign up. Chef Henry always gets a round of applause after these events.



PEARLS OF THE PACIFIC, a nationally touring show band and performing troupe, appears at the Coronado Club tomorrow night for the annual Luau. Flame dancers, grass-skirted performers, and outstanding musicians are featured. The Polynesian feast planned by the Club's kitchen staff will be served in the new covered patio area. Call the Club office, 265-6791, right now for reservations.

VIA News

Here are a couple of current volunteer opportunities for employees, retirees, and family members. If you would like more information, call Karen Shane (4-3268).

MOTHERS AGAINST DRUNK DRIVERS needs court monitors to sit in on DWI and vehicular homicide cases in which alcohol is involved. Half-day per week is required.

UNM SCHOOL OF MEDICINE needs

volunteers, ages 20-40, to serve as a control group against which vitamin measurements from elderly patients will be compared. Volunteers will record eating habits for three days, give one blood sample, undergo a non-invasive test of mineral content in bones, have a one-hour interview with dietician, and receive individual reports.



SANDIANS of the Microelectronics Organization 2100 who worked to provide 15,000 radiation-hardened microelectronic chips for Project Galileo recently signed a scroll that will be photographically reduced and placed aboard the spacecraft. Project Galileo will be launched in February 1986 and reach Jupiter two years later. As it orbits the giant planet, "essentially forever," scientific instrumentation will gather data for transmission to Earth. Judy Odinek (2141) signs the scroll as Gene Reed (2000), seated right, Bob Gregory (2100), standing left, and Wilfred Jaramillio (2141) wait their turn.